Contents of Volume 4

Number 1, JANUARY 1990

Editorial . . . 1

Public Affairs

NASA's Life Sciences Program set for major growth in the decade ahead. . . . 3

Overviews

U.S./U.S.S.R. joint research in space biology and medicine on Cosmos biosatellites. *R. W. Ballard and J. P. Connolly* . . . 5

Cosmos 1887: science overview. *R. E. Grindeland* . . . 10

Research Communications

Cosmos 1887: morphology, histochemistry, and vasculature of the growing rat tibia. *S. B. Doty, E. R. Morey-Holton, G. N. Durnova, and S. K. Kaplansky* . . . 16

Preosteoblast production 55 hours after a 12.5-day spaceflight on Cosmos 1887. *L. P. Garetto, M. R. Gonsalves, E. R. Morey, G. Durnova, and W. E. Roberts* . . . 24

Maturation of bone and dentin matrices in rats flown on the Soviet biosatellite Cosmos 1887. *D. J. Simmons, M. D. Grynpas, and G. D. Rosenberg* . . . 29

Regional distribution of mineral and matrix in the femurs of rats flown on Cosmos 1887 biosatellite. *G. L. Mechanic, S. B. Arnaud, A. Boyde, T. G. Bromage, P. Buckendahl, J. Elliott, E. P. Katz, and G. N. Durnova* . . . 34

Histomorphometric and electron microscopic analyses of tibial epiphyseal plates from Cosmos 1887 rats. *P. J. Duke, G. Durnova, and D. Montufar-Solis* . . . 41

Effects of spaceflight on rat humerus geometry, biomechanics, and biochemistry. *A. C. Vailas, R. F. Zenicke, R. E. Grindeland, A. Kaplansky, G. N. Durnova, K.-C. Li, and D. A. Martinez* . . . 47

Effect of microgravity on metabolic enzymes on individual muscle fibers. *J. K. Manchester, M. M.-Y. Chi, B. Norris, B. Ferrier, I. Krasnov, P. M. Nemeth, D. B. McDougal, Jr., and O. H. Lowry* . . . 55

Metabolic and morphologic properties of single muscle fibers in the rat after spaceflight, Cosmos 1887. *B. Miu, T. P. Martin, R. R. Roy, V. Oganov, E. I. Ilyina-Kakueva, J. F. Marini, J. J. Leger, S. C. Bodine-Fowler, and V. R. Edgerton* . . . 64

Morphological and biochemical examination of Cosmos 1887 rat heart tissue: Part I — ultrastructure. *D. E. Philpott, I. A. Popova, K. Kato, J. Stevenson, J. Miquel, and W. Sapp* . . . 73

Effects of zero gravity on myofibril content and isomysin distribution in rodent skeletal muscle. *K. M. Baldwin, R. E. Herrick, E. I. Ilyina-Kakueva, and V. S. Oganov* . . . 79

Skeletal muscle fiber, nerve, and blood vessel breakdown in spaceflown rats. *D. A. Riley, E. I. Ilyina-Kaueva, S. Ellis, J. L. W. Bain, G. R. Slocum and F. R. Sedlak* . . . 84

Effects of spaceflight on the proliferation of jejunal mucosal cells. *H. R. Sawyer, C. L. Moeller, R. W. Phillips, and K. L. Smirnov* . . . 92

Altered carbohydrate, lipid, and xenobiotic metabolism by liver from rats flown on Cosmos 1887. *A. H. Merrill, Jr., M. Hoel, E. Wang, R. E. Mullins, J. L. Hargrove, D. P. Jones, and I. A. Popova* . . . 95

Effects of spaceflight on the spermatogonial population of rat seminiferous epithelium. *W. J. Sapp, D. E. Philpott, C. S. Williams, K. Kato, J. Stevenson, M. Vasques, and L. V. Serova* . . . 101

Cosmos 1887 mission overview: effects of microgravity on rat body and adrenal weights and plasma constituents. *R. E. Grindeland, I. A. Popova, M. Vasques, and S. B. Arnaud* . . . 105

Index to Authors . . . 110

Calendar . . . 111

Books . . . 120

News

Special Feature: This Is FASEB—American Association of Pathologists. *Frances A. Pitlick* . . . 121

The FASEB Board passes two resolutions; Richard Havel wins Bristol-Myers award; ASBMB Member received Merck award; NLM offers Biotechnology directory; Biophysics Congress calls for abstract. 125

Letters . . . 127

New Products and Literature . . . 130

Employment Opportunities . . . 133

Number 2, FEBRUARY 1990

Public Affairs

NIH and ADAMHA's Conflict-of-Interest Guidelines Withdrawn . . . 137

Tribute

Goodbye, Dr. Krauss . . . 139

Reviews

Hemodynamic and metabolic correlates in adipose tissue: pathophysiologic considerations. *D. L. Crandall and M. DiGirolamo* . . . 141

Structure and function of laminin: anatomy of a multidomain glycoprotein. *K. Beck, I. Hunter, and J. Engel* . . . 148

Hep G2 cells as a resource for metabolic studies: lipoprotein, cholesterol, and bile acids. *N. B. Javitt* . . . 161

Regulation of human T cell leukemia virus expression. *P. L. Green and I. S. Y. Chen* . . . 169

Liver regeneration: molecular mechanisms of growth control. *G. K. Michalopoulos* . . . 176

Activation of prodrugs by antibody-enzyme conjugates: a new approach to cancer therapy. *P. D. Senter* . . . 188

Research Communications

Various proteins modulate the kinase activity of the insulin receptor. *K. Yonezawa and R. A. Roth* . . . 194

Adipose tissue islets: tissue culture of a potential source of fat cells in the adult rat. *R. Carraro, Z. Lu, Z.-H. Li, J. E. Johnson, Jr., and R. I. Gregerman* . . . 201

Activation of human neutrophil phospholipase D by three separable mechanisms. *S. L. Reinhold, S. M. Prescott, G. A. Zimmerman, and T. M. McIntyre* . . . 208

Regulation of TGFβ gene expression in rat liver intoxicated with carbon tetrachloride. *J. Armendariz-Borunda, J. M. Seyer, A. H. Kang, and R. Raghow* . . . 215

Contents of Volume 4

Number 1, JANUARY 1990

Editorial . . . 1

Public Affairs

NASA's Life Sciences Program set for major growth in the decade ahead. . . . 3

Overviews

U.S./U.S.S.R. joint research in space biology and medicine on Cosmos biosatellites. *R. W. Ballard and J. P. Connolly* . . . 5

Cosmos 1887: science overview. *R. E. Grindeland* . . . 10

Research Communications

Cosmos 1887: morphology, histochemistry, and vasculature of the growing rat tibia. *S. B. Doty, E. R. Morey-Holton, G. N. Durnova, and S. K. Kaplansky* . . . 16

Preosteoblast production 55 hours after a 12.5-day spaceflight on Cosmos 1887. *L. P. Garetto, M. R. Gonsalves, E. R. Morey, G. Durnova, and W. E. Roberts* . . . 24

Maturation of bone and dentin matrices in rats flown on the Soviet biosatellite Cosmos 1887. *D. J. Simmons, M. D. Grynpas, and G. D. Rosenberg* . . . 29

Regional distribution of mineral and matrix in the femurs of rats flown on Cosmos 1887 biosatellite. *G. L. Mechanic, S. B. Arnaud, A. Boyde, T. G. Bromage, P. Buckendahl, J. Elliott, E. P. Katz, and G. N. Durnova* . . . 34

Histomorphometric and electron microscopic analyses of tibial epiphyseal plates from Cosmos 1887 rats. *P. J. Duke, G. Durnova, and D. Montufar-Solis* . . . 41

Effects of spaceflight on rat humerus geometry, biomechanics, and biochemistry. *A. C. Vailas, R. F. Zenicke, R. E. Grindeland, A. Kaplansky, G. N. Durnova, K.-C. Li, and D. A. Martinez* . . . 47

Effect of microgravity on metabolic enzymes on individual muscle fibers. *J. K. Manchester, M. M.-Y. Chi, B. Norris, B. Ferrier, I. Krasnov, P. M. Nemeth, D. B. McDougal, Jr., and O. H. Lowry* . . . 55

Metabolic and morphologic properties of single muscle fibers in the rat after spaceflight, Cosmos 1887. *B. Miu, T. P. Martin, R. R. Roy, V. Oganov, E. I. Ilyina-Kakueva, J. F. Marini, J. J. Leger, S. C. Bodine-Fowler, and V. R. Edgerton* . . . 64

Morphological and biochemical examination of Cosmos 1887 rat heart tissue: Part I — ultrastructure. *D. E. Philpott, I. A. Popova, K. Kato, J. Stevenson, J. Miquel, and W. Sapp* . . . 73

Effects of zero gravity on myofibril content and isomysin distribution in rodent skeletal muscle. *K. M. Baldwin, R. E. Herrick, E. I. Ilyina-Kakueva, and V. S. Oganov* . . . 79

Skeletal muscle fiber, nerve, and blood vessel breakdown in spaceflown rats. *D. A. Riley, E. I. Ilyina-Kaueva, S. Ellis, J. L. W. Bain, G. R. Slocum and F. R. Sedlak* . . . 84

Effects of spaceflight on the proliferation of jejunal mucosal cells. *H. R. Sawyer, C. L. Moeller, R. W. Phillips, and K. L. Smirnov* . . . 92

Altered carbohydrate, lipid, and xenobiotic metabolism by liver from rats flown on Cosmos 1887. *A. H. Merrill, Jr., M. Hoel, E. Wang, R. E. Mullins, J. L. Hargrove, D. P. Jones, and I. A. Popova* . . . 95

Effects of spaceflight on the spermatogonial population of rat seminiferous epithelium. *W. J. Sapp, D. E. Philpott, C. S. Williams, K. Kato, J. Stevenson, M. Vasques, and L. V. Serova* . . . 101

Cosmos 1887 mission overview: effects of microgravity on rat body and adrenal weights and plasma constituents. *R. E. Grindeland, I. A. Popova, M. Vasques, and S. B. Arnaud* . . . 105

Index to Authors . . . 110

Calendar . . . 111

Books . . . 120

News

Special Feature: This Is FASEB—American Association of Pathologists. *Frances A. Pitlick* . . . 121

The FASEB Board passes two resolutions; Richard Havel wins Bristol-Myers award; ASBMB Member received Merck award; NLM offers Biotechnology directory; Biophysics Congress calls for abstract. 125

Letters . . . 127

New Products and Literature . . . 130

Employment Opportunities . . . 133

Number 2, FEBRUARY 1990

Public Affairs

NIH and ADAMHA's Conflict-of-Interest Guidelines Withdrawn . . . 137

Tribute

Goodbye, Dr. Krauss . . . 139

Reviews

Hemodynamic and metabolic correlates in adipose tissue: pathophysiologic considerations. *D. L. Crandall and M. DiGirolamo* . . . 141

Structure and function of laminin: anatomy of a multidomain glycoprotein. *K. Beck, I. Hunter, and J. Engel* . . . 148

Hep G2 cells as a resource for metabolic studies: lipoprotein, cholesterol, and bile acids. *N. B. Javitt* . . . 161

Regulation of human T cell leukemia virus expression. *P. L. Green and I. S. Y. Chen* . . . 169

Liver regeneration: molecular mechanisms of growth control. *G. K. Michalopoulos* . . . 176

Activation of prodrugs by antibody-enzyme conjugates: a new approach to cancer therapy. *P. D. Senter* . . . 188

Research Communications

Various proteins modulate the kinase activity of the insulin receptor. *K. Yonezawa and R. A. Roth* . . . 194

Adipose tissue islets: tissue culture of a potential source of fat cells in the adult rat. *R. Carraro, Z. Lu, Z.-H. Li, J. E. Johnson, Jr., and R. I. Gregerman* . . . 201

Activation of human neutrophil phospholipase D by three separable mechanisms. *S. L. Reinhold, S. M. Prescott, G. A. Zimmerman, and T. M. McIntyre* . . . 208

Regulation of TGFβ gene expression in rat liver intoxicated with carbon tetrachloride. *J. Armendariz-Borunda, J. M. Seyer, A. H. Kang, and R. Raghow* . . . 215

A common ancestor for human placental 17β-hydroxysteroid dehydrogenase, *Streptomyces coelicolor* actIII protein, and *Drosophila melanogaster* alcohol dehydrogenase. *M. E. Baker* 222

Methodology

Secreted alkaline phosphatase: an internal standard for expression of injected mRNAs in the *Xenopus* oocyte. *S. S. Tate, R. Urade, R. Micanovic, L. Gerber, and S. Udenfriend* 227

Calendar 233

Book List 234

News

Special Feature: This is FASEB—The American Physiological Society. *Martin Frank and Aubrey E. Taylor* 235

FASEB Summer Research Conferences 240
In Brief 250
Special Feature: Criteria for Successful Careers 252

Letters to the Editor

Meal-induced peptide tyrosine tyrosine inhibitor of pancreatic secretion 255
Essential fatty acids and immune response 255
The real options on the War on Drugs 256

New Products and Literature 258

Employment Opportunities 263

Numbers 3 and 4 - Abstracts

Number 5, MARCH

Public Affairs

The Human Genome Initiative: A Different Type of Research . . . 1423

Reviews

Aggregin: a platelet ADP receptor that mediates activation. *R. W. Colman* 1425

Homeogenes in mammalian development and the evolution of the cranium and central nervous system. *P. Lonai and A. Orr-Urtreger* . . 1436

Octamer transcription factors and the cell type-specificity of immunoglobulin gene expression. *I. Kemler and W. Schaffner* 1444

Cobalamin-dependent methionine synthase. *R. V. Banerjee and R. G. Matthews* 1450

Movement of proteins through the Golgi stack: a molecular dissection of vesicular transport. *J. E. Rothman and L. Orci.* 1460

Molecular biology of $GABA_A$ receptors. *R. W. Olsen and A. J. Tobin* 1469

Research Communications

Interleukin 1 receptors on rabbit articular chondrocytes: relationship between biological activity and receptor binding kinetics. *J. E. Chin and R. Horuk* 1481

Membrane morphogenesis from cloned fragments of bacteriophage PM2 DNA that contain the sp6.6 gene. *G. A. Armour and G. J. Brewer* . . . 1488

Production of an EDRF-like activity in the cytosol of N1E-115 neuroblastoma cells. *L. D. Gorsky, U. Förstermann, K. Ishii, and F. Murad* 1494

Retroviral transfer of a chimeric multidrug resistance-adenosine deaminase gene. *U. A. Germann, K.-V. Chin, I. Pastan, and M. M. Gottesman* 1501

Fractal geometry in mosaic organs: a new interpretation of mosaic pattern. *P. M. Iannaccone* 1508

Glutathione correlates with lipid peroxidation in liver mitochondria of triiodothyronine-injected hypophysectomized rats. *V. T. Maddaiah* 1513

Calcium waves in mammalian heart: quantification of origin, magnitude, waveform, and velocity. *T. Takamatsu and W. G. Wier* 1519

Erratum 1525

Calendar 1526

News

Previews/Highlights of FASEB Annual Meeting Symposia 1528
In Brief 1537
Special Feature: COBIOTECH's Role in Biotechnology Worldwide. *Philipp Gerhardt* 1540

Letters to the Editor

Dental Silver Tooth Fillings 1542
Animal Rights 1542

New Products 1544

Information for Authors 1545

Employment Opportunities 1549

Number 6, APRIL

Public Affairs

Sharing the Pain—NIH Institutes Cope With Lean Times 1561

News

In Brief 1563

Reviews

Specificity of molecular changes in neurons involved in memory storage. *D. L. Alkon and T. J. Nelson* 1567

Molecular architecture of basement membranes. *P. D. Yurchenco and J. C. Schiltny* 1577

Bifunctional thymidylate synthase-dihydrofolate reductase in protozoa. *K. M. Ivanetich and D. V. Santi* 1591

The sodium pump needs its β subunit. *A. A. McDonough, K. Geering, and R. A. Farley* 1598

Diversity in mammalian tachykinin peptidergic neurons: multiple peptides, receptors, and regulatory mechanisms. *C. J. Helke, J. E. Krause, P. W. Mantyh, R. Couture, M. J. Bannon* 1606

Complex and diversified regulatory programs control the expression of vertebrate collagen genes. *F. Ramirez and M. Di Liberto* 1616

Research Communications

Immature cortical neurons are uniquely sensitive to glutamate toxicity by inhibition of cystine uptake. *T. H. Murphy, R. L. Schnaar, and J. T. Coyle* 1624

Cellular stress induces a redistribution of the glucose transporter. *C. C. Widnell, S. A. Baldwin, A. Davies, S. Martin, and C. A. Pasternak* . 1634

Effect of buffer systems and pH_i on the measurement of $[Ca^{2+}]_i$ with fura 2. *M. B. Ganz, J. Rasmussen, W. B. Bollag, and H. Rasmussen* . . 1638

Ex vivo lipopolysaccharide-induced interleukin 1 secretion from murine peritoneal macrophages inhibitied by probucol, a hypocholesterolemic agent with antioxidant properties. *G. Ku, N. S. Doherty, L. F. Schmidt, R. L. Jackson, and R. J. Dinerstein* 1645

Mediation of renal vascular effects of epidermal growth factor by arachidonate metabolities. *R. C. Harris, K. A. Munger, K. F. Badr, and K. Takahaski* 1654

Human chagasic IgG interacting with lymphocyte neurotransmitter receptors triggers intracellular signal transduction. *L. Sterin-Borda, G. Gorelik, A. Genaro, J. C. Goin, and E. S. Borda* 1661

Effect of carbachol and cyclic GMP on susceptibility to ventricular fibrillation. *G. E. Billman* 1668
Membership 1674
Calendar 1675
Book List 1686
New Products and Literature 1687
Employment Opportunities 1689

Number 7 - Abstracts

Number 8, MAY

Public Affairs
The Public Image of Science and Its Funding 2431

News
In Brief 2433
Highlights/previews—ASBMB/AAI Joint Annual Meeting 2435
Special Feature: Use and importance of the NIH noncompeting continuation application. *S. L. Gordon and D. M. Watson* 2438

Reviews
Dihydrofolate reductase as a therapeutic target. *B. I. Schweitzer, A. P. Dicker, and J. R. Bertino* 2441
Mechanisms of cytochrome P-450 catalysis. *F. P. Guengerich and T. L. Macdonald* 2453
Biochemistry of fish antifreeze proteins. *P. L. Davies and C. L. Hew* . 2460
Mechanisms responsible for the cardiotoxic effects of cocaine. *G. E. Billman* 2469
Molecular genetics of neuronal development in the *Drosophila* embryo. *J. B. Thomas and S. T. Crews* 2476
Recent developments in the field of iron-sulfur proteins. *H. Beinert* 2483

Research Communications
Effects of neurotransmitters and peptides on phospholipid hydrolysis. *R. K. Malhotra, S. V. Bhave, T. D. Wakade, A. S. Bhave, and A. R. Wakade* 2492
Acute modification of biomechanical properties of the bone-ligament insertion to rat limb unweighting. *R. Vanderby, Jr., A. C. Vailas, B. K. Graf, R. J. Thielke, M. J. Ulm, S. S. Kohles, and D. N. Kunz* . . . 2499
Interaction of GABA and volatile anesthetics in the nematode *Caenorhabditis elegans*. *M. V. Boswell, P. G. Morgan, and M. M. Sedensky* 2506
Upregulation of serum retinol in experimental acute renal failure. *T. H. Gerlach and M. H. Zile* 2511
Antibody production in vitamin A-depleted rats is impaired after immunization with bacterial polysaccharide or protein antigens. *A. M. G. Pasatiempo, M. Kinoshita, C. E. Taylor, and A. C. Ross* 2518

Methodology
Efficient production of chicken egg yolk antibodies against a conserved mammalian protein. *M. Gassmann, P. Thömmes, T. Weiser, and U. Hübscher* 2528
Enzymatically activated microencapsulated liposomes can provide pulsatile drug release. *P. G. Kibat, Y. Igari, M. A. Wheatley, H. N. Eisen, and R. Langer* 2533

Erratum 2539

Letter to the Editor
Animal Rights 2540

Calendar 2541
Book List 2542
New Products & Literature 2543
Employment Opportunities 2545

Number 9, JUNE

Public Affairs
Biomedical Research: Critical Issues for the 1990s 2569

News
Highlights: ASPET's 1990 Meeting 2584
In Brief 2585

Reviews
Role of oxygen free radicals in carcinogenesis and brain ischemia. *R. A. Floyd* 2587
What distinguishes tenascin from fibronectin? *R. Chiquet-Ehrismann* . 2598
Diet and metabolic development. *M.-T. E. Little and P. Hahn* 2605
Ethanol and guanine nucleotide binding proteins: a selective interaction. *P. L. Hoffman and B. Tabakoff* 2612
Molecular anatomy and molecular design of channel proteins. *M. Montal* 2623
Molecular biology of mammalian amino acid receptors. *R. Dingledine, S. J. Myers, and R. A. Nicholas* 2636
Pathogenic idiotypes of autoantibodies in autoimmunity: lessons from new experimental models of SLE *Y. Shoenfeld and E. Mozes.* . . . 2646
Metabolic effects of dietary fructose. *J. Hallfrisch* 2652

Research Communications
NK cell-induced cytotoxicity is dependent on a Ca^{2+} increase in the target. *D. J. McConkey, S. C. Chow, S. Orrenius, and M. Jondal* 2661
Recombinant gene expression in pulmonary vascular endothelial cells: polarized secretion in vivo. *S. C. Bernstein, M. J. Skoskiewicz, R. Jones, W. M. Zapol, and P. S. Russell* 2665

Methodology
Immobilization of small molecules and proteins by radio-derivatized polystyrene. *J. M. Varga and P. Fritsch* 2671
Binding of a mouse monoclonal IgE (anti-DNP) antibody to radio-derivatized polystyrene-DNP complexes. *J. M. Varga, G. F. Klein, and P. Fritsch* 2678

Letters to the Editor
Animals in Research 2684
Frederick K. Goodwin
William L. Dewey

Calendar 2685
Books 2688
New Products & Literature 2689
Employment Opportunities 2691

Number 10, JULY

Editorial

FJ: Up and Running. *L. I. Gidez* 2697

Public Affairs

The Code Words of Budgeteering. *G. Kaganowich* 2701

News

In Brief 2703

Special Feature: By responding quickly and wisely, universities can avoid the traps set by animal-rights groups. *W. R. Hendee and J. M. Loeb* 2706

Overview

Receptor-channel alterations in disease: many clues, few causes. *S. H. Snyder and T. Narahashi* 2707

Reviews

Cystic fibrosis: a disease in electrolyte transport. *P. M. Quinton* 2709

Abnormal regulation of ion channels in cystic fibrosis epithelia. *M. J. Welsh* 2718

Prospects for specific immunotherapy in myasthenia gravis. *L. Steinman and R. Mantegazza* 2726

Asthma: a disorder of adrenergic receptors? *P. A. Insel and S. I. Wasserman* 2732

Dopamine receptors and transporters in Parkinson's disease and schizophrenia. *P. Seeman and H. B. Niznik* 2737

Is the neuronal basis of Alzheimer's disease cholinergic or glutamatergic? *A. M. Palmer and S. Gershon* 2745

Nicotine receptors in the mammalian brain. *C. W. Luetje, J. Patrick, and P. Seguela* 2753

Disorder of the inhibitory glycine receptor: inherited myoclonus in Poll Hereford calves. *A. L. Gundlach* 2761

Disorders of the inhibitory glycine receptor: the *spastic* mouse. *C.-M. Becker* 2767

Myoclonus: analysis of monoamine, GABA, and other systems. *S. R. Snodgrass* 2775

Abusive stimulation of excitatory amino acid receptors: a strategy to limit neurotoxicity. *H. Manev, E. Costa, J. T. Wroblewski, and A. Guidotti* 2789

Muscular dysgenesis: a model system for studying skeletal muscle development. *J. A. Powell* 2798

Muscular dysgenesis in mice: a model system for studying excitation-contraction coupling. *B. A. Adams and K. G. Beam* 2809

Calendar 2817

Books 2824

New Products & Literature 2825

Information for Authors 2828

Employment Opportunities 2832

Membership 2840

Number 11, AUGUST

Public Affairs

Senate Panel Opposes Anti-Earmarking Tactic 2841

News

In Brief 2843

Special Feature: Going both ways: bispecific antibodies and targeted cellular cytotoxicity. *M. W. Fanger, D. M. Segal, and J. R. Wunderlich* 2846

Reviews

Animal models of spontaneous diabetic kidney disease. *M. T. Velasquez, P. L. Kimmel, and O. E. Michaelis, IV* 2850

Biology of multifunctional cytokines: IL 6 and related molecules (IL 1 and TNF). *S. Akira, T. Hirano, T. Taga, and T. Kishimoto* 2860

Integrins and other cell adhesion molecules. *S. M. Albelda and C. A. Buck* 2868

Turning off the signal: desensitization of β-adrenergic receptor function. *W. P. Hausdorff, M. G. Caron, and R. J. Lefkowitz* 2881

Brown adipose tissue thermogenesis: interdisciplinary studies. *J. Himms-Hagen* 2890

Secondary ^{18}O isotope effects as a tool for studying reactions of phosphate mono-, di-, and triesters. *W. W. Cleland* 2899

Research Communications

Interferon-γ-induced priming for secretion of superoxide anion and tumor necrosis factor-α declines in macrophages from aged rats. *D. R. Davila, C. K. Edwards, III, S. Arkins, J. Simon, and K. W. Kelley* 2906

Stimulation of vascular cell proliferation by β-galactoside specific lectins. *G. L. Sanford and S. Harris-Hooker* 2912

Zinc status and peripheral nerve function in guinea pigs. *B. L. O'Dell, J. Conley-Harrison, C. Besch-Williford, J. D. Browning, and D. O'Brien* . 2919

Membrane-associated 41-kDa GTP-binding protein in collagen-induced platelet activation. *G. Walker and L. Y. W. Bourguignon* . . . 2924

Methodology

Characterization of benzodiazepine receptors with fluorescent ligands. *R. T. McCabe, B. R. de Costa, R. L. Miller, R. H. Havunjian, K. C. Rice, and P. Skolnick* 2934

Letters to the Editor 2941

The Human Genome Project: two points of view. *M. Rechsteiner, R. L. White and R. F. Gesteland*

Calendar 2943

Books 2944

New Products & Literature 2945

Employment Opportunities 2948

Membership 2952

Number 12, SEPTEMBER

Public Affairs

NIH Funding: Good News, Bad News 2953

News

Highlights: APS Joint Specialty Meeting 2955

FASEB Summer Research Conferences 2958

In Brief 2960

Reviews

Control of glycogen synthase by hierarchal protein phosphorylation. *P. J. Roach* . . . 2961

Metabolism of carotenoid pigments in birds. *A. H. Brush* . . . 2969

Molecular pathology of glucose-6-phosphatase. *A. Burchell* . . . 2978

Cellular signaling by peptides of the endothelin gene family. *M. S. Simonson and M. J. Dunn* . . . 2989

Cyclic GMP and photoreceptor function. *R. N. Lolley and R. H. Lee* . . . 3001

An enzyme with a double identity: purple acid phosphatase and tartrate-resistant acid phosphatase. *J. B. Vincent and B. A. Averill* . . . 3009

Research Communications

Mosquito oostatic factor: a novel decapeptide modulating trypsin-like enzyme biosynthesis in the midgut. *D. Borovsky, D. A. Carlson, P. R. Griffin, J. Shabanowitz, and D. F. Hunt* . . . 3015

Cytochalasin B induces cellular DNA fragmentation. *M. A. Kolber, K. O. Broschat, and B. Landa-Gonzalez* . . . 3021

A common ancestor for *Candida tropicalis* and dehydrogenases that synthesize antibiotics and steroids. *M. E. Baker* . . . 3028

Localization of monoclonal antibody TNT-1 in experimental kidney infarction of the mouse. *F-M. Chen, J. R. Wisner, Jr., H. Omachi, I. G. Renner, C. R. Taylor, and A. L. Epstein* . . . 3033

Methodology

Molecular mapping of pulmonary endothelial membrane glycoproteins of the intact rabbit lung. *M. P. Merker, W. W. Carley, and C. N. Gillis* . . . 3040

Errata . . . 3049

Membership . . . 3050

Letter to the Editor . . . 3051

Improved Federal Research Support—National Information Campaign. *J. H. Weisburger*

Calendar . . . 3052

Books . . . 3054

New Products & Literature . . . 3055

Employment Opportunities . . . 3057

Number 13, OCTOBER

Editorial

Unesco and U.S. . . . 3061

Public Affairs

Fingers-Crossed Celebration of Gene Therapy . . . 3063

News

Highlights: ASCB 30th Annual Meeting . . . 3065

In Brief . . . 3066

Reviews

Heart failure: mechanisms of cardiac and vascular dysfunction and the rationale for pharmacologic intervention. *G. S. Francis and J. N. Cohn* . . . 3068

Doxorubicin cardiotoxicity: analysis of prevailing hypotheses. *R. D. Olson and P. S. Mushlin* . . . 3076

In vivo models of arterial thrombosis and thrombolysis. *L. R. Bush and R. J. Shebuski* . . . 3087

The new metabolism: molecular genetics in the analysis of metabolic regulation. *A. G. Goodridge* . . . 3099

Relationship of cell growth to the regulation of tissue-specific gene expression during osteoblast differentiation. *G. S. Stein, J. B. Lian, and T. A. Owen* . . . 3111

Research Communications

Protection of HeLa-T4$^+$ cells against human immunodeficiency virus (HIV) infection after stable transfection with HIV LTR-2',5'-oligoadenylate synthetase hybrid gene. *H. C. Schröder, D. Ugarkovic, H. Merz, Y. Kuchino, T. Okamoto, and W. E. G. Müller* . . . 3124

Inverse correlation between steady-state RNA and cell surface T cell receptor levels. *J. E. Maguire, S. A. McCarthy, A. Singer, and D. S. Singer* . . . 3131

Active oxygen species mediate asbestos fiber uptake by tracheal epithelial cells. *J. Hobson, J. L. Wright, and A. Churg* . . . 3135

Scanning tunneling microscopic images show a laminated structure for glycogen molecules. *X. Yang, M. A. Miller, R. Yang, D. F. Evans, and R. D. Edstrom* . . . 3140

Methodology

Viewing molecules with scanning tunneling microscopy and atomic force microscopy. *R. D. Edstrom, X. Yang, G. Lee, and D. F. Evans* . . . 3144

Establishment and characterization of a clonal line of parathyroid endothelial cells. *M. L. Brandi, R. L. Ornberg, K. Sakaguchi, F. Curcio, A. Fattorossi, P. I. Lelkes, T. Matsui, M. Zimering, and G. D. Aurbach* . . . 3152

Letter to the Editor . . . 3159

Investigation of scientific misconduct: virtue or hypocrisy? *R. Refinetti*

Calendar: Society and Other Events . . . 3161

Books . . . 3167

New Products & Literature . . . 3168

Employment Opportunities . . . 3170

Number 14, NOVEMBER

Public Affairs

Qui Tam Suits: Scientific Misconduct Goes to the Jury . . . 3173

News

In Brief . . . 3175

Biogenesis

Transduction of receptor signal into modulation of effector activity by G proteins: the first 20 years or so. . . . *L. Birnbaumer* . . . 3178

Reviews

Theoretical studies of protein conformation by means of energy computations. *G. Némethy and H. A. Scheraga* . . . 3189

Legume lectins—a large family of homologous proteins. *N. Sharon and H. Lis* . . . 3198

Oncogenes in growth and development. *S. Travali, J. Koniecki, S. Petralia, and R. Baserga* . . . 3209

Cytotoxic mechanism of tumor necrosis factor-α. *J. W. Larrick and S. C. Wright* . . . 3215

Molecular biology and biochemistry of pyruvate dehydrogenase complexes. *M. S. Patel and T. E. Roche* . . . 3224

Research Communications

Apparent mineralocorticoid excess, pseudohypoaldosteronism, and urinary electrolyte excretion: toward a redefinition of mineralocorticoid action. *J. W. Funder, P. T. Pearce, K. Myles, and L. P. Roy* . . . 3234

Relationship between growth of *Escherichia coli* and susceptibility to the lethal effect of paraquat. *H. Minakami and I. Fridovich* . . . 3239

Human growth hormone in the blood of athymic mice grafted with cultures of hormone-secreting human keratinocytes. *J. Teumer, A. Lindahl and H. Green* . . . 3245

Protection against cisplatin toxicity by administration of glutathione ester. *M. E. Anderson, A. Naganuma, and A. Meister* . . . 3251

Whole-body imaging of the distribution of mercury released from dental fillings into monkey tissues. *L. J. Hahn, R. Kloiber, R. W. Leininger, M. J. Vimy, and F. L. Lorscheider* . . . 3256

Letter to the Editor . . . 3261

The Human Genome Project: answers closer than you think? *Donald R. Forsdyke*

Calendar . . . 3262

Books . . . 3263

New Products & Literature . . . 3264

Employment Opportunities . . . 3267

Membership . . . 3270

Number 15, DECEMBER

Public Affairs

FASEB Scientists' Response to Institute of Medicine Report on Funding Health Sciences Research. . . . 3271

News

In Brief . . . 3273

Reviews

The two binding-site models of human IgG binding Fcγ receptors. *J. Gergely and G. Sarmay* . . . 3275

Microtubule dynamics. *J. Avila* . . . 3284

Receptor-mediated regulation of calcium channels and neurotransmitter release. *R. J. Miller* . . . 3291

Control of the renal microvasculature by vasoactive peptides. *P. K. Carmines and J. T. Fleming* . . . 3300

Role of set-point theory in regulation of body weight. *R. B. S. Harris* . . . 3310

Posttranslational modification of proteins by isoprenoids in mammalian cells. *W. A. Maltese* . . . 3319

Research Communications

Biosynthesis and urinary excretion of methyl sulfonium derivatives of the sulfur mustard analog, 2-chloroethyl ethyl sulfide, and other thioethers. *N. M. Mozier and J. L. Hoffman* . . . 3329

Complete life cycle of the canid tapeworm, *Echinococcus multilocularis*, in laboratory rodents. *M. Kamiya and H. Sato* . . . 3334

DNA modification in vivo by derivatives of glucose: enhancement by glutathione depletion. *T. K. Shires, J. Tresnak, M. Kaminsky, S. L. Herzog, and B. Truc-Pham* . . . 3340

Structural requirements for protection by small amino acids against hypoxic injury in kidney proximal tubules. *J. M. Weinberg, M. A. Venkatachalam, R. Garzo-Quintero, N. F. Roeser, and J. A. Davis* . . . 3347

Neutrophils contribute to ischemia/reperfusion injury in rat liver in vivo. *H. Jaeschke, A. Farhood, and C. W. Smith* . . . 3355

Cell-surface expression of glia maturation factor β in astrocytes. *R. Lim, Y. Liu, and A. Zaheer* . . . 3360

Letters to the Editor . . . 3364

Percentage of Principal Investigators (PIs) Competing for NIH Grants that are Funded. *J. W. Flesher* . . . 3364

Ageless Investigators. *M. Freund* . . . 3364

Author's reply. *A. Mazzaschi* . . . 3365

Glycogen Cover Inspires Poem. *K. C. Leibman* . . . 3365

Acknowledgment . . . 3366

Calendar . . . 3367

New Products & Literature . . . 3369

Employment Opportunities . . . 3371

Indexes—Volume 4

Author . . . 3375

Subject . . . 3377

Membership . . . 3382